

*Mercurius Centralis :*

O R,

A Discourse

OF  
Subterranean C O C K L E,  
Muscle, and Oyster-shells,

Found in the digging of a Well at  
*Sir William Doyle's* in *Norfolk*,  
many foot under ground, and at  
considerable distance from the Sea.

*Sent in a Letter to Thomas Brown, M.D.*

By *THO. LAWRENCE, A.M.*

L O N D O N :

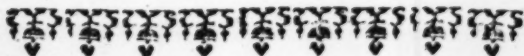
Printed by *J.G.* for *J. Collins*, and are to be sold  
at the Angel in *Ivies-lane*. 1664.



Imprimatur.

June 13. 1664.

Roger L'Estrange.



*Mercurius Centralis :*

O R,

A Discourse

OF  
Subterraneal C O C K L E,  
Muscle, and Oyſter-ſhells,

Found in the digging of a Well at  
*Sir William Doyle's* in *Norfolk*,  
many foot under ground, and at  
conſiderable diſtance from the Sea.

*Sent in a Letter to Thomas Brown, M.D.*  
By *THO. LAWRENCE, A.M.*

L O N D O N :

Printed by *J.G.* for *J. Collins*, and are to be ſold  
at the Angel in *Ivie-lane*. 1664.

10  
/





TO THE  
Reader.

READER,



*Am unwilling  
to make those  
Common -  
Pleas (with  
which thou hast been  
sufficiently tired alrea-  
dy)*

---

## The Epistle

---

dy) for my exposing this  
to the publick, lest I be-  
come as censurable for  
these, as for the Tract  
it self. I must confess  
that I sent it willingly  
into the light; and al-  
though I cannot pretend  
any general good in it,  
yet it may be useful to  
some that are studious of  
Natures book, as ano-  
ther mans discoveries  
or rational Discourses  
may

---

To the Reader.

---

*may be to me. I do not  
fear to say, that I have  
so much doated on the  
Volumes of the Crea-  
tion, that as I cannot  
think the meanest of  
Gods creatures so de-  
spicable but that its  
contemplation deserves  
to be matter of business  
as well as of diversion  
to the wisest; so (to those  
that are considerate and  
observing) the Arcana*

---

## The Epistle

---

*Naturæ, or (if it be law-  
ful so to call these) the  
magnalia Dei, are much  
more valuable and  
worth our search. If I  
have discovered any  
thing in this little hand-  
ful, as I hope I have;  
or if the discovery can  
be to any, any way use-  
ful, as I hope it may be,  
either to satisfy, or at  
least to aduate them to a  
further inquiry (the  
Field*

---

To the Reader.

---

Field is large enough,  
we need not juggle I  
have my design. And  
though it were, or be  
but a partial detecting  
of a concealed truth;  
yet even that will hide  
some indiscretions in  
the management. How-  
ever as he said of Evils,  
*Μυρία κρύπτη κακὰ μυχῶς.* I may  
say of my faults, The  
secrecy of the business  
discourfed will hide the

errors

---

To the Reader, &c.

---

*errours of the discour-  
ser. But if thou shouldst  
judge me fond of a  
phanſie or invention,  
I ſhall not fail of thy  
excuse, ſince I am not  
the firſt that have run  
naked into publick  
with an *εὐγνῶ* in my  
mouth; what is amiſs  
amend, and*

Farewell.

T. L.

---

I

---

*Mercurius Centralis :*

OR,  
A DISCOURSE

OF  
*Subterranean Cockle, Muscle,  
and Oyster-shells, found in  
the digging of a Well, &c..*

**D**OCTOR, I have made  
the best inquiry I  
could in so short a  
time, after the truest cause  
of that vein of Cockle and  
Muscle-shells that was dig-  
ged up in Norfolk, so ma-  
ny foot deep under the sur-  
face.

face of the Earth. And upon my most serious examination do believe, that that *reason* which I casually bolted out when you first mentioned it to me, is the most *likely* and *probable*, if not the only that can be given of it; of which I will give more than empty conjectures in the following Discourse. But before I come to unfold that my *opinion*; I will insist on some things that relate to it, both for *method* sake, and



and to gain a little the more *Reputation* to it; and then will give you, or any else leave to judge of it as you shall think fit; nor shall it displease me if any are of a different judgment.

God that made the *Universe* for Mans *use* and *delight*, hath beautified it with infinite varieties. In the *animal* kingdom, what diversity of Creatures, *Volatile*, *Reptile*, *Natant*, and *Gradient*? How different their *shape*, *use*, *colour*

lour, greatnefs, and finallnefs,  
their fents, their tempers,  
natures? How various  
their amities, enmities, sym-  
pathies, and antipathies?  
In the *Vegetable* kingdom,  
how different their shapes,  
proportions, colours, orders,  
tastes; the first, second and  
other qualities of their  
leaves, flowrs, roots, barks,  
seeds, fruits, tears, and  
gumms? Nor is Nature less  
skilful in generating and  
ordering the strange *Forms*  
and *Figures* of *Subterranean*  
bodies. Amongst an hun-  
dred

dred thousand *stones* on a *strand*, a man shall not find *two* that in all things exactly agree; and yet there is many times some more general and gross likeness.

But if we examine the several *species* of *Mineral bodies*, there will be visible an admirable and pleasing variety. Some are seen in the form of *Cylinders*, of which I have been present when many thousands have been taken out of *Marle-pits*. Some are exactly *spherical*  
like

*Ovied.  
lib. 17.*

like Bullets, but much bigger; so equally round that no art can be more exact, and of them many *Ship loadings*, between two Hills in *Cuba*. Many hundred *flints* in the same form I have found dispersedly near the place I live in: In which also I have observed that their coat and external covering is white; next to that the stone is very black; but nearer to the Centre it is of a brighter colour, in which by the help of a *Microscope*

I have seen as it were little *sparkling Diamonds*; in others of the same form I have found with my naked eyes many thousand such *sparkling stones* as big as *pins-heads*, and some as big as small *barley-corns*, of an excellent lustre when they are held in the Sun. I have seen likewise *Fossiles Ætites*, if I may so call them; *stones* in an *Oval* shape as big as *Pigeons Eggs*, hollow in the inside, and impregnate with lesser *stones*, which on the shaking

king betray'd themselves by their sound, as the kernels in the dry stones of Peaches. Diamonds, and our Cornish and Bristol stones are all generated with Mr. S. S. spires or points. A friend of mine imparted to me a fluor that grew on a rocky stone that is very clear and shoots in the same form, and is so hard that it will cut glass. Some are seen in the form of Cones, some of Pyramids, some of Semispheres, and gutter'd and furrow'd on the sides like

like the pummels of some  
Swords; some smooth, some  
writhed. Crystal doth shoot  
in sexangulos. I saw stones  
digged out of a little Ca-  
vern by a Springs-side be-  
tween St. Ives and Somers-  
ham in Huntingdon-shire,  
every one of them had the  
same Figure, and were in  
compals sexangular, with  
two broader and more  
depressed superficies, on ei-  
ther side it made a perfect  
Rhomboides, clear as Cry-  
stal, but very soft and apt  
to scale; of which none  
knew

knew any considerable use: only the powder of it was found good to Cicatrize green wounds. And indeed almost all sorts of *stones*, whether more choice and orient, or more base and vulgar, have for the most part besides their different virtues, several *Figures* and *Colours*. But these are mean, low and common observations. What shall we think of that, *Cornu Monocerotis fossile*; those *ossa subterranea & fossilia*, which

w  
ne  
lik  
gi  
sto

the  
ag  
ve  
we  
beg  
ex  
Ti  
Co  
ha  
siz  
suc  
Sc  
ar  
th  
ma  
by



which are very often generated of *osteocolla* and the like substances, and have given complexion to those stories of \* Gyantick races <sup>\* Not</sup> <sup>that I</sup> deny that there have been men of vast bodies in several ages. The Sons of Anak were without question very great men. Goliath and others mentioned were Giants. We read of Giants famous from the beginning, that were of so great stature and so expert in war, Baruch 3. 26. of the Sons of the Titans and high Giants, Judith 16. 7. At Coggeshall were found two teeth that might have been cut into two hundred of an ordinary size. Camb. de Trinobant. St. Augustine saw such an one at Utica. But these even in the Scripture, the most exact history in the World, are recorded as rare; so that I do not believe that they have been common in any Country, much less that any Country hath been inhabited by only such. An old Poet cited by our Anti-quary

quary speaking that Cornwall was the seat of some, saith they were but few.

— — — — — *Tiranibus illa*

*Sed paucis famulosa domus.*

Vid. Hackwell in Apolog. de hoc subjecto.

in several Countries; because this, like bones of men, hath been found of a vast bigness? What shall we think of those bones of Fish, and such Subterranean Muscle and Oyster-shells found at Darmstadt in the Palatinate, and at other places near Heide!berg, and in Silesia, and those you mentioned to me? At New-house a seat of one Mr.

Mr. *Eyres* in *White-Parish*  
in the County of *Wilts*, as  
they were digging of a  
Well about *thirty foot deep*  
(as it was related to me)  
between two veins of *sand*  
were found infinite num-  
bers of *Oyster-shells* in a  
bed, both *shells* closed to-  
gether, and nothing dis-  
cernable between them  
but a little *dust*. But far-  
ther yet, what can we say  
of those *Tables of stone* in  
which are seen the *Pi-  
ctures* of divers *Planets*, of  
*Frogs*, *Serpents*, *Salaman-  
ders*;

*Epitom.*  
*Phys.lib.*  
*5.cap.4.*

ders; nay, *Principum & illustrium virorum* images, as *Sennertus* saith are found in *Islebia*? I my self have seen an *Agate* with a natural foil like a *Blackmoores* head, and another like an *Oaken leaf*, that some have went to brush away, and yet it was within the stone, and so exact too, that it deceived the very sight. *Erasmus* describeth one that he saw in *England* in a *Temple* at the feet of the image the *Virgin Mary*, in which there

there was the form of a  
Toad. I will set it down  
in his own words. Og.

*Erasm:*  
*Ad pedes virginis est gemma* *Coll. Pe-*  
*cui nondum apud Latinos aut* *grin. re-*  
*lig. Ergo.*

*Græcos nomen inditum est,*  
*Galli à Bufone nomē dederunt,*  
*eo quod bufonis effigiem sic ex-*  
*primat, ut nulla ars idem possit*  
*efficere. Quodq; majus est mi-*  
*raculum; pusillus est lapillus;*  
*non prominet bufonis imago,*  
*sed in ipsa gemma velut inclu-*  
*sapellucet.* This, Menede-  
mus that discourseth with  
him, imputes rather to  
the fancy of the beholder;

as Children think they see heads, and faces, and bulls, and swords, in the Clouds. But he answereth. *Imò nè sis nesciens, nullus bufo vivus evidentius exprimit seipsum quam illic erat expressus.* And from his companions incredulity taketh occasions largely to discourse the strange forms of stones. Now although it be impossible to find out the certain causes of these most noble and reclusive works of Nature, these being,

being such things where-  
in we have very great rea-  
son to admire the *provi-*  
*dence* of God, and his most  
*perfect* *work-man-ship*, that  
hath given to each crea-  
ture (as *Scroder* calls it)  
*rationem seminalem*; or as  
*Severinus*, the knowledge or  
science of its own proper  
form. And indeed some  
of them are in this as cer-  
tain as the most *voluntary*  
*agents*. And even those  
which casually obtain  
these shapes may be  
guessed at, for (besides  
B 2            the

the *lufus naturæ*, which most flie to) the creatures they represent may be petrified, à *spiritu lapidescente*; or may be inclosed as in a Coffin in the purer unconcrete matter of stones; which being speedily hardened, and those in some measure assimilated to that stony substance, their lineaments shine through, as Flies cased in Amber are seen almost as clearly as if they were out of it. And particularly for such shells we are now to discourse of, there



there may be some conjecture had of some of their *forms*; and this brings me to distinguish between *Muscle* and *Cockle-shells* really, and such in *shape* and *appearance* only; for I have seen many *stones* in the *shape* of these, which I imagine were thus made. The *Oyster*, *Muscle*, or *Cockle-shells*, lying in such places where they have been cast out by men, have *casually* received the *succus lapidescens*, or *unconcrete matter* of *stones*, and

B<sub>3</sub> have

have become a *bed* or *matrix* to it; and so hath that *stone* been shapen according to this *mould*, as *gourds* while they are young put in *glassses* grow not according to their usual natural *form*, but according to the *shape* and *proportion* of the *glassses*.

2. If they were really *Muscle* and *Cockle-shells*, that could not be the *place* of their *generation*, but they must be by some *violence* and *impetuosity* hurried thither; and for their  
*loco=*

*loco-motion* we can find no other *Media* than the *earth* or *air*. And *first* for the *air*. Those that have sailed to the *Indies* can inform you with what force *Hir- canoes* or *Turbines* (which some distinguish ; but I think that there is no other difference between them, than that the *Hir- cano* is a *circumagitation* of the *air* or *whirlewind* tending downwards ; and the *Turbo* the *whirlewind* tending upwards) the meeting together of contrary furi-

ous winds, have taken up whole Seas of water ; and what should hinder them that when they fall foul near a *shore*, they should not rake the *Seas*, and carry other bodies besides the *water*? Some *Mariners* in the *North-west discovery* were eye-witnesses of such a *whirlwind*, that for the space of three hours together, took up vast quantities of *water*, furiously mounting them up in the *air*. And altogether as strange hath the force of it

*Hackluyt. Disc.*  
*10.3. p.*  
*100.*

it been on dry ground; of which Bellarmine gives us *Bell. de* a relation that it is so in- *Ascens.* credible, that he premiseth *ment. in* this, *Deum;* *Grad. 2.* *cap. 4.* *Quod nisi vidissem, non crederem.* He thus describeth it; *Vidi ego à vehementissimo vento effossam ingentem terræ molem, eamq; delatam super pagum quendam, ut fovea altissima conspiceretur unde eruta fuerat, & pagus totus coopertus & quasi sepultus manserit, ad quem terra illa devenerat.* It is ordinary in most histories to read of bloud  
fals.

*Anno* falling in showres, or at  
*ab urbe* least of what is analogous to  
*condita* bloud, of wood, wool, worms.  
*ccclxxx* Munster\* tells us of Frogs,  
*lac de* Mice, and Rats, that fell  
*cælo ma-* with some feculent showres  
*nare vi-* in Norway. There is one  
*sam est.* at this time living, that  
*Oros. lib.* walking through a low  
*4. cap. 5.* marish ground in England,  
 In the fourth year of  
 Ivor the son of  
 Alan in Wales, it rained bloud in England and  
 Ireland. Welch. chron. *Gabiis lacte pluit. T.*  
*Graccho, Tit. Manlio, Coss. In Gracostasi. C. C. L.*  
*Cai. Sext. Coss. Præneste. L. Cecil. L. Aurel. Coss.*  
*In Agro Perusino P. Sor. G. Atil. Coss. sanguis*  
*per biduum pluit in Area Vulcani & Concordia.*  
*M. C. Quint. Fab. Coss. Lapid. Pluvia. In*  
*Aventino Tusciis lapidibus pluit. Vid. Jul. Obs.*  
*de prodig. ad fin. Plinii.*  
 \* Munster. *Cosmog. lib. 4. cap. 22.*

in

in a foggie morning, had his Hat almost covered with little *Frogs*, that fell on it as he walked: and many at some times on the tops of houses and leads, have found great numbers of such creatures. At *Arles* in *France* in the year 1553. Infinite swarms of *Valeriola* Locusts fell on their fields, and *obs. lib. 1.* immediately devoured all that *obs. 1.* was green, *Magnâ incolarum admiratione & consternatione.* So we read that by an East wind the Locusts which covered the face of *Egypte* were

*Organ-  
tius.*

were brought on it, & by  
as a strong *West* wind they  
were carried off again;  
*Exo. 10. 13, 19.* Stones like-  
wise have thus fallen. In  
*Japan*, on a day when  
they solemnized a great Fe-  
stival to their Idol, there  
fell among them a great  
showre of stones, which  
slew many, and put the  
rest to their heels to shift  
for themselves. And it  
is very likely that those  
showres of hail that slew so  
many in several stories,  
were *grandines lapidum*, (as  
*Lactantius*



Lactantius calls those <sup>Lactant.</sup>  
showres of vengeance, that <sup>Dio. Just.</sup>  
God will at the last send <sup>l. 7. c. 26.</sup>  
on the Devil and his ac-  
complices) to which the ex-  
pression of history agrees.

At the time of Alexanders <sup>Oros. l. 3.</sup>  
birth, *Saxea de nubibus* <sup>c. 6.</sup>

*grando descendens, veris ter-  
ram lapidibus verberavit.*

And to this is the Scripture  
consonant, *Jos. 10. 11.* For  
what is called hail in the  
later part of the verse, is  
stones in the former. And  
as they fled from before Israel,  
and were going down to

Be-

Bethoron, the Lord cast down great stones from heaven upon them unto Azekah, and they died. And that heterogeneous bodies are found in mines, and on the tops of mountains, *Arist. Meteor.* Aristotle insinuates this to be the cause, viz. that they are brought to such places by the winds. It seems I must confess the more colourable, that things should be brought this way from the Sea, because the Sea both of old, and more lately, hath been deemed to be the father

father of the winds. Erasmus describing Parathalassia saith, *In propinquo est oceanus ventorum pater*, and the old Poet speaking of the generation of the winds, finds out the same cause:

Ος τε ἀρυσάμενος ποταμῶν ἀπο ἀν-  
 -ναόντων  
 ὧν γαίης ἀρθεῖς ἀνέμοιο θυέλλη.  
 Hesiod. Oper. & dies p. 44.

And therefore winds have in some places been observed to be Obsequious to the course of the Moon as the waters are, which that Roman Poet hints.

Thra-

*Horat. Carm. lib. 1.* *Thracio bacchante magis sub  
interlunia vento.*

*Od. 25.*

•Tis true, no man can tell  
the force and fury of the  
unbridled winds, that are  
so mad that they know  
not whence they come,  
nor whither they will.  
But yet were such heteroge-  
neities which are found so  
deep this way brought, they  
should be found in all or  
most places alike; and  
they should be found a-  
bove ground too, unless  
we can imagine that  
immediately on their fall-

falling the Earth suffer some *Chasm*, and doth ingulf and swallow them into its *bowels*. And therefore it is most probable they are brought to such places from the Sea, the place of their Generation, generally *under the Earth*.

3. If they are brought from the Sea to the place they are found in, *under the Earth*, it must be either by a natural or by a supernatural impellent or mover; by spirits, or by a natural vehicle. No man that is either a  
Phi

Philosopher or a Christian can doubt of the power of spirits, by Gods command or permission, to effect this and many more actions that are far more difficult and unlikely. And Paracelsus with some others would have us believe that there are innumerable such spirits or genii that inhabit the Earth, as he hath projected there are Inhabitants of the Sun, Moon, and other Planets, which he calls Solar, Lunar, Saturnine, &c. and  
of

of the *air* which he styles *aerial*. And to their managements referreth all the natural motions of *Generation* and *Corruption*, and the violent, as of *Chasms*, *Earthquakes*, and other alterations in the bowels of the Earth. Nay, they reduce them to several *Classes* and *Orders*, and with a little invitation would be ready to swear, that many of them are *Engineers* that contrive the *Water-works*, and make *Rivers* and *Aqueducts*; that  
some

some are *Blacksmiths* by Trade that work in the *Vulcanoes*; that some are *Brewers* that boil *natural baths*, and use *Minerals* instead of *Mault*. But these opinions are such, that besides their own natural absurdity, our Religion will teach us to explode, and are then confuted when they are only named: For though we grant that some such things are possible to be done by the *Devil*; that is not so the Prince of the power



power of the *air*, as not to be the *God* of this *lower world*; yet to impute all things to them must needs be *asylum ignorantiae*, and a *Remora* to all *ingenious* and *Philosophical* *disquisitions*, of the *nature* and *causes* of all things and *actions* in the *bowels* of the *Earth*, and a means to make us know no more of *nature* than what is *obvious* to *sense*. So that I take it for granted, that some *natural, ordinary vehicle* there is under the *Earth* that brings

brings such heterogeneous bodies from their native and genial seat, and proper place, to such *Vaults, Hills, Veins,* and *Caverns* where they are found.

4. Now the most likely movers of all others to carry bodies of weight under the *Earth* are two; either *exhalations* or *waters*; for as for *vapours*, I look not on them as capable of carrying any thing of weight, especially so low in the *Earth*, where they cannot be so much rarefied, by  
rea-

reason of the natural coldness of that Element. 'Tis true, May-dew which is a vapour condensed will carry up an Egg-shell in which it is put, by the help of a Pike or Spear placed by it. But this is in the sight of the Sun, and if so much as a thin cloud interpose it falls again immediately : Again, the shell is exceeding light ; besides that, the dew is sealed in it that it cannot get out ; and even this moves upwards towards the Sun, not side-  
ways

ways along the *Earth*. So that it must be concluded, that vapours cannot be serviceable to our purpose, so as to force whole veins of shells or other bodies to places so far distant from the Sea, and there to ram them in. It remains then, that this be effected by one or other of the former means.

As for exhalations, and that their force is such that can impetuously move bodies of the greatest weight, we need look no further than

So than our *Gun-powder*, and  
u- the *Machines* or *Engines*  
ot that are used by or with  
ir- it; such as *Cannons*, *Bul-*  
le- *lets*, *Balls* of *Lead* or *Iron*,  
ies *Stones*, *Granadoes*, &c. of  
ant which some, by the help  
to of a cold and dry exhalation  
ns pent in the *Niter* or *Salt-*  
ed *Peter*, and suddenly by fire  
for- flying out, make as stu-  
pend refractions of the  
nd air, and obtain a violence  
ch equal to that of our usual  
ove *thunder* and *lightnings*. And  
ht, after the same manner is  
her their force and light caused,  
an C the

the violence and noise of *Aurum Fulminans*. And these exhalations which have such effects above, have the same strength under ground, as appears by *Earthquakes*, with which there are usually heard a

\* *Terra  
mugi u  
tremuit*

\* *murmur and sound*. When *Sempronius Gracchus* was

*M. Cat. Quint. Mart. Coss. Fremitus infernus ad Cælum ferri visus M. Anton. A. Posth. Coss. Fremitus terra etiam Fasulis auditus M. Perpenn. Cai. Claud. Coss.* The City *Ferrara* in the year 1570. was surprized with a fearful noise, as if it had been battered with great Ordinance, afterwards with a most violent trembling.

set-

setting on the *Piceni*, and they were just joyning battel ; \* *tam horrendo fragore terra tremuit, ut stupore* \* Oros. lib.4. cap.4. *miraculi utrumque pavementum agmen hebesceret.* These make the Earth tremble, the Mountains rowl, the Rocks quake, and especially if the *exhalation* that causeth them be impregnate with *Nitrosulphureous* spirits, which have sometimes thrust out *hills* where there were plains, *Islands* in the midst of Seas, made huge *Rivers*

C 2

where

where there were none, turned the current of some, stopped others, left vast caverns and holes, depressed Mountains, swallowed Cities and Armies, subverted Temples and Palaces. Cizicus a City of *Misia minor*, with the famous Temple of Jupiter there, were both swallowed in an *Earthquake*; and so was *Philadelphia* another City of the same *Misia*, and one of the Churches *St. John* writ to. *Apoc. 3. 7.* In an *Earthquake* in *Vinianfu* in



in China, the Nitrosulphureous spirits burst out of the Earth in such an actuall flame, that it consumed the whole City and innumerable people. At Hien in the same Country, the fall of the houses by the same Earthquake flew eight thousand. At Enchinocn an hundred thousand perished. Immediately on the bitter persecution of Dioclesian, a fearful Earthquake happened in Syria, by which Tyre and Sydon were almost destroyed, and many

*Oros.lib. 7.c.17.*

C 3

many thousands were kil'd.

*Lucan.  
lib. I.*

—— *Quatiente ruina*

*Nutantes pendere domos.*——

Or as the same Author elsewhere describeth an earthquake,

—— *Cardine tellus*

*Subsedit, veterémq; jugis nutantibus Alpes*

*Discussere nivem.*——

*Jos. Ant.  
liq. l. 9.  
c. 11.*

We read of one in Judeah, at Uzzah's usurpation of the Priests office, which rent the Temple, and a Hill in the East was removed four furlongs towards the West; of another in Herods Reign,

Reign, that flew ten thousand Jews. Marcley hill with us in *Hereford-shire*, Anno 1571. with a great noise removed it self from its place, and went continually for three dayes together, overthrowing *Kinnaston Chapel*, bearing the earth 400. yards before it. And therefore *Exhalations* may be granted to remove stones and sands, and with them such heterogeneous bodies as lie on them, from one place to another, from the sea to the hills,

C 4

*bills, from a coast far into a countrey. But Earthquakes are not frequent in any places unless near Vulcanoes, and are less usual in these parts; and yet in most places all over Europe, such heterogeneous bodies have been found under the Earth, at great distance from the Sea. Again, the force of Exhalations is most evident in mountainous, rocky countreys, because when they are pent into such places they cannot have vent; whereas these bodies*

bodies are often found in  
*mosses, bogs, and marish*  
*grounds, as frequently as*  
in other earth.

5. So that they are  
most likely to be hurried  
thither by the force of  
*waters, passing from the*  
*Sea through the caverns*  
*of the Earth.* The reason-  
ableness of which opinion  
will the better appear, if  
we consider that,

1. As the Earth is of a vast  
compass, and no less than  
*7000 miles in Diameter, of*  
which the Water doth not

C 5

make

make above one third part of the *Globe*, and that on the *surface* of Earth too ; and so far as was ever yet discovered of the *Earth*, no part of it is destitute of some *mineral substance* continually generating in it, unless where either the *Sun* exhales the force of it, or Nature is otherwise employed in producing *Vegetables*. So that if the *Earth* be kept from the sight of the *Sun*, and the production of plants, nor is apt to other generations

tions, yet it fails not to produce *Saltpeter* or *Nitre* in good quantity. And this is the reason that *Saltpeter-men* dig in *Stables*, *Cellars*, and other houses. So that in the whole bowels of the Earth, what vast heaps, what mountains of *metalls* are there? Some *in fieri*, some *in facto esse*; perfect and imperfect; mean *metalls*, *Stones*, *Fluors* of all sorts, *Salts*, and concrete *Juices*; besides the several sorts of *Earths*, *Chalks*, *Boles*, *Bitumina*, and

and the mixtures of all or any of these, of which it were much too large, and more besides my purpose particularly to discourse.

2. Where there are so vast and numerous generations, 'tis impossible that they should succeed without vast quantities of water. Nay, to speak more home, the first matter that hath been yet discovered of all *Minerals*, is no other than a certain *Juice* or *water impregnate* with the *seminal vertue* of this or that



that Mineral stone or Metall,  
which from water (when  
it hath found a conveni-  
ent matrix) becomes a gelly,  
and from a gelly this or  
that stone or metall. This  
is obvious from several  
springs, whose water im-  
pregnate with the seeds of  
stone, having found a place  
of rest convert into perfect  
stone. Of which sort, we  
read of some in \* Hunga-  
ry, of others in Peru by \* \* *W. ir-*  
\* *Acosta.* In Guancavilica <sup>*ner. de*</sup>  
there is a Fountain that <sup>*Aq.*</sup>  
turns into a Rock, with <sup>*Hungar.*</sup>  
<sup>*\* Acost.*</sup>  
<sup>*l. 3. c. 17.*</sup>  
which

which an whole Village is built. At Newnham Regis in Warwick-shire, our Geographers tell us of a Well that after the same manner turneth wood into stone; of another in the the North, that dropping from above into a Cave, becomes clear and very hard stone beneath. *Rivus est apud Scotos Ratra dictus, in cujus ripa est spelunca, in qua guttatim ex fornice distillans nuda lapidescit in metas, quæ nisi tollantur humana industria, spatium totum opplerent*

*Bert.**Geog.**P. 127.*

rent. Some Minerals are no other than certain kind of Juices accreted, as *Allum, Vitriol, &c.* And Mine-masters have sometimes found Metalls liquid and unconcrete when they have peirced a Mine too soon; *Matthesius* mentions liquid Silver found by some. And for this without doubt among other causes, is water by the *Ancients* called *Panspermia*; for that the seeds of things in the Earth have very little vertue without this,

this, *Moses* insinuates, *Gen.*  
 2.5. where he gives this  
 reason why no Plants yet  
 grew, viz. because they  
 lay in arido, for the Lord had  
 not caused it to rain on the  
 earth. I am very confident  
 that the Poets did not only  
 call *Venus* the Goddesse of  
 generation, Αφροδίτην ἡ θεὰν,  
 the spume-born Goddesse,  
 from the saltness of the  
 spume, (though some of  
 later date have therefore  
 called her Αλιγμένη) but from  
 the waters that bare it.  
 Nor is there any question  
 to

to be made, but that the  
Inhabitants of the waters  
are therefore more nume-  
rous than other creatures,  
not for any saltness, which  
at the most can

but \* irritate to  
copulation, but  
doth not ren-  
der the seed e-  
ver the more

\* *Aegyptii ideo à sale  
abstinuerunt ( teste  
Plutarcho) quod sa-  
lem venerem irritare  
persuasum haberent. Le-  
vin. Lemn. de Nat.  
Miracul. l. 2. p. 228.*

prolificall. For fresh water  
fish are as multiplicative of  
their species as the other in  
proportion. There is not  
a fish that swimmeth in  
the deep that hath a grea-  
ter

ter quantity of spawn considering his bulk, than a *Carp*; yet it is a *fresh water fish*.

Nor can I believe there can any other reason be given, why the *Irish women* have so many *Children*, than because their *Country*, and consequently themselves, are so exceeding moist, as appears by their *stature*, their *pale countenances*, their *flaccid*, *soft* and *phlegmatick habit of body*. And indeed I think that it were as reasonable to seek for *taste* in  
an

an egg, as for salt in the <sup>Ex ovo</sup>  
sperm of fish or any other <sup>omnia.</sup>  
creature; for by virulent <sup>Harv.</sup>  
Gonorrhœa's it appears that And  
a sharp and saline quality, is what  
a token rather of corrupti- taste is  
on than of any active and there in  
generative energy. Et quod the  
<sup>white of</sup>  
<sup>a egg?</sup>  
<sup>Job.</sup>  
*Verissimum est dicimus; No-*  
*vimus & jam nosco mulieres*  
*varias conjugatas sat juve-*  
*nes, quæ ab erroribus dietæ à*  
*Pica sive Malacia causatis,*  
*præcipuè à salitorum, vel potiùs*  
*ab incommisti salis esu, non*  
*tandum sordidos pallidos fæ-*  
*tidosque obtinere colores; cu-*  
*tes*

*tes impolitas & rugosas, ventriculos nauseabundos; verumetiam suffocatæ omnino evaserunt & steriles.* But although I attribute the effects above mentioned to *water* rather than *salt*; yet ~~it~~ would not be conceived to imbibe *Thales Milesius* opinion, that *aqua* is so named, *quasi à qua omnia*, as if all things were from it; and yet do believe that it is *causa sine qua non*, and a great nurse and fosterer of Generations, if not a Parent of them. And of *Minerals*



als too ; especially if we should embrace the opinion of the *Peripateticks*, that all *mixed bodies* are immediately *composed* of the four *Elements* ; for then these being the most *ponderous bodies*, must needs have in them the most *weighty Elements* in good quantity, and those are *Earth and Water*.

3. The Sea is the original of all Waters ; nor could any fountain else afford enough to supply the Earth to all uses.  
That

That which by the Neotericks hath lately been found out, of the Circulation of the Bloud and Humours in the *Microcosm*, was long since discovered (which might possibly hint that) in the greater world. *Eccles. 1.7.* *All rivers run into the Sea, yet the Sea is not full: unto the place from whence the rivers come, thither they return again.* And what huge quantities of water must be necessary for the whole Earth, may be hence

hence inferred, that the  
*superficies* of it needs so  
much, that besides the in-  
numerable Springs, Foun-  
tains, Channels, Rivers  
and Lakes with which it  
is irrigated, were it not  
for frequent *showres*  
from above, would soon  
be parched up, and un-  
able to produce *sustenance*  
for Man or Beast; which  
help the bowels of the  
Earth are destitute of;  
for the moisture of *showres*  
peirceth not above ten  
foot deep at the most.  
And

And indeed, this is the onely reason that can be given of the Seas saltness, because it doth wash, and so dissolve much salt from the rocks of Salt in subterranean caverns where it doth pass, and would long ere this have caused places, where such rocks have been, to sink in: But that, first, there is a continual generation and accretion, as well as a dissolution; and secondly, because that Salt is very hard, insomuch that some  
stones

stones of salt there are found in several waters undissolved; as those of which *Cambden* informs us in the River *Weere* near *Batterby* in the *Bishoprick* *Cambd.* of *Durham*. And as for *Brit. Bri-* that dreadful story of *Lots* *gant.* wife turned into a pillar of salt, *Gen. 19. 26.* we are to believe the thing, so may it not be improbable that it was termed a pillar, as well for the solidity, durability, and difficulty of dissolution, as well as for its shape and form; God  
D striking

striking her in that manner, as a more *durable monument* of his anger against Disobedience. And our *glass* at this day is but *salt* after its *highest fusion*, and yet it is very *solid* and *durable*, and imports no quality to water. Thirdly and lastly, the *Sea-water* having imbibed so much *salt* before, is the less able to dissolve more.

4. That though the *Sea* on the *coast* near the shore, may communicate its waters by *perlocation*,

tion, yet to places at great distance it cannot pass so as to afford a due supply, but by *Gulphs* and *subterranean In-draughts*. In many places of the world they make the *sea-water* potable and *fresh* by digging of pits in the sand, into which the *sea-water* streining it self, leaves its *saltness* behind. But this must be done at no great distance from the *Sea*, and it must be in sand or clay, or the like; for if the shore be rocky,

D 2      it

it will not do ; as we see in many places where they dig a very great depth for *fresh water* near the *Sea*, and cannot be supplied till they find a *fresh spring*, a great many foot under the *surface* of the *Sea*. So we see that when we *filtrate* liquors through *shop-paper*, if it be thin and *bibulous*, it passeth ; if thick and too close, it will not pass. Some illustrate the *percolation* of the *sea-water* by this experiment. Take



a round ball of *moist clay*, make it *hollow* in the inside, fill it with *salt water*, lay it to the *fire*, and it will *extill* by the *pores* of the *clay*, and become *fresh* and *insipid*.

Now that there are vast *gulphs* and *chanels* from the *sea* under the *earth*, will easily appear, when we consider, that some great *lakes* and *oceans* there are, that have no other way to *vent* themselves. What way can the *Caspian Sea* exonerate it self

D 3

by,

by, after it hath taken into it *Volga*, *Jaxares*, *Ochus*, *Oxus*, and other huge Rivers? What other reason can be given why some lakes are full of sea fish, and yet at great distance from the Sea? In *Bainoa*, a Province of *Hispaniola*, is a lake of salt water which hath 24 Rivers running into it, yet never increaseth, and hath *Sharks* and other sea-fish in it. Again, there are salt springs in all Countreys that ebbe and

and *flow* as the Sea and the Coasts do. There are also *salt rivers*, as *Ochus* and *Oxus* ; *salt lakes*, as that before mentioned. Besides this, it is ordinary for *chanel*s and *rivers* to run a great way on the *earth*, and then to *ingulp* themselves. The waters of the *Cirknickzerksey* <sup>Georg. Wiene-</sup> lake in *Carniola*, gush with <sup>rns.</sup> that violence and swiftnesse out of the ground, that they will overtake a swift Horse-man, and presently are swallowed.

D 4 in

in a deep gulph again. In the Province of *Cazidium* in *Hispaniola* is a great cave in an hollow rock, under the root of a very high mountain, in which divers Rivers, after they have run *four-score and ten miles*, pass as into an *indraught*, and are swallowed up. In most Countreys we read of the like. A mountain there is in *Caermarthen-shire*, where *Careg-castle* sometimes stood, in which are many spacious

cious holes and wide caves, with a Well that ebbs and flows as the Sea on the Coast doth, twice in four and twenty hours. The Current of one and the same Sea in several parts contrary ways demonstrates this, as in the Atlantick Sea, in some places from, and in some places towards the North, like Liquor in a funnel. In some places there are whirlepoles, whose waters turn clean round, in-somuch that if a Ship at

D 5

such

Such an  
one  
there is  
in the  
North  
Sea, near  
the coast  
of Nor-  
way.

*Moral.*  
*decad. 7.*  
*c. 8.*

luch times come over them, they are in most extreme danger of *sinking*: At other times the waters with that *violence* come out of the earth, that a Cannon cast over-board will not *sink*. This caused *Taurellus*, and some others, to think these the onely cause of the *Tides*. *Andreas Moralis* on the Coast of *Hispaniola* was sucked into *Whirlpools*, where with that *violence* the water was drawn into the earth, that with

with extraordinary toil the Ship hardly escaped sinking. Again, the heterogeneous bodies that are found so deep, are such usually that either are generated, or most usually dwell in the Sea; as shells, bones of fish, masts, anchors, parts of ships. At Berna <sup>Simlerus</sup> in Switzerland, Anno 1460. <sup>Orielius</sup> fifty fathom deep, in a Mine where they got metall-oar, a <sup>Fracastorius</sup> Ship was digged up, in which were forty eight carkases of Men, with other merchantise. Out of the Ocean into,

*In Greenland a Mast* into the Medi-  
*was digged out of the* terranean Sea,  
*top of an high Hill*  
*with a pully hanging* there is a con-  
*to it.*

tinual current  
by the *streights of Gibraltar* ; another Current  
into the same out of  
the *Euxine Sea*, by the  
*Thrasian Bosphorus* ; be-  
sides, very many and  
great Rivers. And which  
way can it exonerate it  
self? for those vast flouds  
do not increase it. And  
*Solomons Circulation* of hu-  
mours in the *Macrocosm*  
above mentioned, is ve-  
ry



ry considerable; nor is the *Analogy* in this particular between that and the lesser World obscure. For the *Sea* in that answereth to the *Fountain* of *bloud* in this. The *Subterranean Rivers*, and those above ground, may answer to the *vessels* containing the *bloud*. And both these answer to the *Vasa attrahentia*, & *deferentia*; for the *subterranean chanel*s carry the *water* from the *Sea*, the *Rivers* return it to the *Sea*.

Again,

Again, as both sorts of vessels are greater near the fountain of bloud in the body; so are the chanel biggest nearest the Sea their fountain; and though it may sometimes happen otherwise, yet if the banks of any are wider, so that they look like lakes a great while before they discharge themselves into the Ocean; I look on it but as casual, and bearing proportion with the divarications of vessels in mans body. Again,  
vessels

vessels in our bodies are from *trunks* (like trees) branched out, in *ramulos*, *surculos*, and other minute *distributions* (answering to the *stalks* of leaves or fruits) which are again subdivided into *capillary conveyances*, and thence the *bloud* and *humours* pass *per poros* for the *nutriment* of the *solid parts*; so are the *Rivers* above (and without doubt the *channels* under ground in *proportion* to them) from their *main trunks* divided into

into Brooks, those Brooks into Rivulets, these into lesser conveyances as it were capillary vessels, and every where dispersed and disseminated according to the exigence of nature, and thence passe through the pores of the Earth, that no part may be destitute of a due supply for the Generation and increase of all bodies. Again, the *æstus maris* bears some proportion to the pulse of the blood in the *Microcosm*, the ebbing and contraction of  
of

of the *water* is the *systole*; the *turgescency*, *floating*, and *dilatation* of the *water*, is the *diastole*; the space between both the *perisystole*. Again, as in the *heart* and in some *vessels* only that carry the *bloud* that *motion* is to be found; so is the *æstus* discovered in some *vessels* only that conveigh the *humour* of the *greater World*. Not that I look on this as any kind of *proof*, but as an *illustration*, the better to guide our *conceptions* in

in *Natures Water-works*, by what is seen that we may the better understand that which is not seen, or at least not so plainly. However enough to our purpose it is, that such *Subterranean chanel*s there are from the *Sea* under the *Earth*. As for the common scruple of the improbability of the *waters* rising so high out of the *Sea* to the *superfice* of the *Earth*, it is the least hindrance of an hundred; for if there be

a continuity of the air,  
waters will rise as high as  
the surface of the waters  
from whence they came,  
as appears in Siphunculis;  
and therefore may rise  
to the tops of the highest  
hills. For the highest  
places of the Sea answer  
to the tops of the loftiest  
mountains, or else the  
earth could not

be spherical. To  
this the Psalmist is conso-  
nant, Psalme  
104. The wa-

*Were it not for bounds  
God hath set, the wa-  
ters are high enough  
to turn again and co-  
ver the earth, v. 9. He  
hath Chambers or  
Receptacles by which  
to water the hills, v. 13  
ters*

ters go up by the Mountains,  
they go down by the Valleys  
unto the place which thou  
hast founded for them.  
With what violence do  
the waters gush out of  
Saint Winifreds Well in  
Wales on the top of a  
great hill? Again, com-  
pression of those vast  
quantities of water for-  
cing them into *Earth*, may  
make them mount the  
higher; as *Hoggsheads*  
full and newly broached  
run the faster. I'll il-  
lustrate this by the fol-  
low-



lowing experiment. Take two round Boards equally sized, fasten strong Leather to those Boards above, below, and on the sides so close that they may hold water; from the lower board let an hollow pipe go up on the out-side higher than the upper board; fill this instrument with water; then put a weight on the upper board, and proportionable to the weight so will the waters mount  
to

to a greater or lesser height, as in this Figure.



A. The upper board.  
 B. The lower board.  
 ccc. The Leather on every side.

D. The

er  
e. D. The Pipe through  
which the water will leap up-  
wards.

E. The weight of com-  
pression.

But it may be object-  
ed, that this is an adven-  
titious and external com-  
pression; and not that of  
the water onely. But I  
answer, that such a  
compression there is in  
the Sea from agitation of  
the waters by wind, and  
other causes; and yet  
that waters by their own

na-

*natural compression will mount higher than the brims of the vessel containing, may be evident from this, that if we take one of a considerable capacity, with a pipe on the outside something higher than its brims; and rub the brims with Rosin, or such like Gum, and then fill it full till no more water can be poured in, stopping the orifice of the pipe in the mean time with ones finger, then removing the*  
*finger*

*finger*, it will presently  
*burst* out at the *pipe*. It  
may be demanded then,  
Why are not all Rivers  
*salt*? To this I an-  
swer; That most of them  
have their waters *stopped*  
and *percolated*, and so  
leave their *saltnesse* be-  
hind. But as for those  
that have no hinderance,  
they are not onely *salt*,  
but do constantly *ebbe*  
and *flow*, as hath been ex-  
emplified already. Those  
that have a stoppage by  
a *bank of earth* to such an

E *beighth*

heighth onely, issue fresh  
 water at their ebbe, and  
 at their flote salt; as that  
 fountain in the Isle of Gades  
 doth. Those that are  
 salt, and have no tides,  
 are such as after perco-  
 lation wash some rocks  
 of salt before their erup-  
 tion.

See Or-  
 tel. map.  
 epitomi-  
 xed in  
 the de-  
 scription  
 of Gades.

5. Where mighty flouds  
 come with violence, as  
 these must of necessity  
 do by reason of the vast  
 quantity, the mighty com-  
 pression, and the unspeak-  
 able weight of the waters  
 of

of the *Ocean*, they will easily carry with them *light*, and with no great difficulty *ponderous bodies*. This needs not, and therefore shall not, have any proof.

6. *Heterogeneous bodies* by the *weight* and *strength* of *waters* forced into a *narrow place*, cannot easily by the *return* of those beyond them, (if they return at all the same way) be brought forth again. Because there is little or no *compression*, and

E 2

there-

therefore the return of the water is *leisurely*, and by *degrees*. This is obvious to Sense, and therefore needs no *illustration*.

7. And as much evident to sense it is that any *heterogeneous bodies* so remaining *unremoved*, soon gather *slime* and *sand* about them, and in a small space of time are lodged as it were in *firm ground*. This is no more wonderful than to have any *vessel* in the *Microcosm*



*cosm* obstructed by crude  
and heterogeneous bodies,  
*ceteris paribus*. Nor need  
we seek for rare *Water-*  
*works*; for every ordinary  
gutter and sink will de-  
monstrate this.

And thus (*Doctor*) you  
have my Opinion of the  
way by which those  
*Cockle*, *Muscle*, and *Oyster-*  
*shells* you mentioned,  
were brought and lodg-  
ed in that place. If  
they were truly *shells*,  
they were conveyed ei-  
ther above or under ground;

E 3      but

but not so usually above, therefore under. If under ground, then by natural or voluntary agents. If by natural and necessary, then either by *Vapours*, *Exhalations*, or *Waters*; but this is done usually and commonly by none of the former, therefore by the last; which is the more likely to effect it,

1. Because there are numerous generations in the Earth.

2. Where many generations are, much water is necessary.

3. No

3. No fountain can supply the earth to these purposes but the Sea, which is the original of all waters.

4. Though the Sea communicate his waters to places near it by percolation; it must and doth supply that afar off by whole floods, gulphs and indraughts.

5. Where mighty floods come with violence, they will carry very weighty bodies with them.

6. Heterogeneous bodies are not easily brought back

back again when they are  
*forced* into a narrow place.

7. But in a little time  
gather *slime*, and *earth* a-  
bout them, and so are  
lodged in firm ground.

Psal. 139. 14.

*Marvellous are thy works*  
(O Lord) and that my soul  
knows right well.

FINIS.

re  
ne  
a-  
are

orks  
Foul